

## ABSTRACT OF THE DISCLOSURE

A switch router and one or more gateways incorporating a diagnostic and calibration system that performs RF characterization of an underlying cable plant. The switch router is connected at a point of insertion or point of distribution and each gateway is located downstream, such as at corresponding subscriber locations. The switch router and each gateway sends a test signal with known characteristics and power level, and the receiving device determines noise level and power loss for the corresponding downstream and upstream channel pair. The power loss information is used to calibrate the power level of the transmitters. The noise levels are used to determine if the selected modulation schemes employed for normal communications is realizable. A frequency analysis, such as FFT or the like, is performed on the upstream test signal spectrum to derive valuable frequency information for the upstream channel or the entire upstream bandwidth.